WHAT IS CLAIMED IS:

1. An information reproducing apparatus for performing maximum-likelihood decoding by reading out information recorded on a recording medium, comprising:

a detecting section which detects information recorded in the recording medium and which outputs a reproduction signal;

an equalizing section which performs partial response equalization of a detection signal detected by the detecting section and which outputs an equalized signal;

a correcting section which corrects the potential of the equalized signal output from the equalizing section in accordance with a correction amount determined on the basis of a plurality of reference levels that is used for the maximum-likelihood decoding; and

a maximum-likelihood decoding section which performs maximum-likelihood decoding by referencing the reference levels, in accordance with the equalized signal corrected by the correcting section, and which outputs a decoding signal.

2. An information reproducing apparatus according to claim 1, wherein, when the plurality of reference levels that are used for the maximum-likelihood decoding are represented by LV(1), LV(2), …, LV(n-1), and LV(n) in sequence from the lower level and when a

plurality of peak levels in a histogram of equalized signals that correspond to the reference levels and that are output from the equalizing section are represented by LP(1), LP(2), …, LP(n-1), and LP(n) in sequence from the peak level whose corrected value is smaller, the correction amount is determined by the correcting section to be a value that satisfies at least one of:

$LP(1) = LV(1) - \alpha$ (where α is a constant); and

$LP(n) = LV(n) + \alpha$, and

in accordance with the correction amount, the correcting section changes a signal amplitude of the equalized signal corresponding to the reference level.

3. An information reproducing apparatus according to claim 2, wherein the correction amount to be determined by the correcting section is a value determined such that the constant α is the same as a value LVd represented by each interval between the plurality of reference levels that are used for the maximum-likelihood decoding.

4. An information reproducing apparatus according to claim 1, wherein the correction amount to be determined by the correcting section is a value determined such that at least one of corrected values of the plurality of peak levels in the histogram of the equalized signals that correspond to the reference levels and that are output from the equalizing section

matches values of the plurality of reference levels that are used for the maximum-likelihood decoding.

5. An information reproducing apparatus according to claim 1, wherein the correction amount to be determined by the correcting section is a value determined such that at least one of corrected values of the plurality of peak levels in the histogram of the equalized signals that correspond to left and right reference levels adjacent to a central reference level matches values of the left and right reference levels adjacent to the central reference level of the plurality of reference levels that are used for the maximum-likelihood decoding.

6. An information reproducing apparatus according to claim 1, wherein when a histogram of the equalized signals has an asymmetric distribution including a fine portion and a coarse portion with respect to a peak level corresponding to a central reference level the reference levels, the correction amount to be determined by the correcting section is a value determined such that, in left and right reference levels adjacent to the central reference level of the plurality of reference levels that are used for the maximum-likelihood decoding, a value of the reference level on the side where the distribution includes the fine portion matches a corrected value of a peak level corresponding to the value of the reference level.

7. An information reproducing apparatus according to claim 1, wherein the correction amount to be determined by the correcting section is a value determined such that reference levels provided at second left and right portions from a central reference level of the plurality of reference levels that are used for the maximum-likelihood decoding matches at least one of corrected values of a plurality of peak levels of the equalized signals corresponding to the reference levels provided at the second left and right portions from the central reference level.

8. An information reproducing apparatus according to claim 1, wherein when a histogram of the equalized signals has an asymmetric component distribution including a fine portion and a coarse portion with respect to a peak level corresponding to a central reference level the reference levels, the correction amount to be determined by the correcting section is a value determined such that, in reference levels provided in second left and right portions of the plurality of reference levels that are used for the maximum-likelihood decoding, a value of the reference level on the side where the distribution includes the fine portion matches a corrected value of a peak level corresponding to the value of the reference level.

9. An information reproducing apparatus according to claim 1, wherein, when the plurality of reference

levels that are used for the maximum-likelihood decoding are represented by LV(1), LV(2), …, LV(n-1), and LV(n) in sequence from the lower level and when a plurality of peak levels in a histogram of equalized signals that correspond to the reference levels and that are output from the equalizing section are represented by LP(1), LP(2), …, LP(n-1), and LP(n) in sequence from the peak level whose corrected value is smaller, a value LVd represented by each interval between the plurality of reference levels that are used for the maximum-likelihood decoding is used to perform output restriction for the equalized signals to signals in a range between LP(1) - 1/2·LVd and LP(n) + 1/2·LVd.

10. An information reproducing apparatus according to claim 1, wherein the correcting section perform correction by using a variable gain amplifier whose amplification factor can be changed corresponding to external signals.

11. An information reproducing method for performing maximum-likelihood decoding by reading out information recorded on a recording medium, comprising:

detecting information recorded in the recording medium and outputting a reproduction signal;

performing partial response equalization of a detection signal detected by the detecting section and outputting an equalized signal;

correcting the potential of the equalized signal

in accordance with a correction amount determined on the basis of a plurality of reference levels that are used for the maximum-likelihood decoding; and

performing the maximum-likelihood decoding by referencing the reference levels, in accordance with the equalized signal corrected by the correcting section.

12. An information reproducing method according to claim 11, wherein, when the plurality of reference levels that are used for the maximum-likelihood decoding are represented by LV(1), LV(2), …, LV(n−1), and LV(n) in sequence from the lower level and when a plurality of peak levels in a histogram of equalized signals that correspond to the reference levels and that are output from the equalizing section are represented by LP(1), LP(2), …, LP(n−1), and LP(n) in sequence from the peak level whose corrected value is smaller, the correction amount is determined to be a value that satisfies at least one of:

$LP(1) = LV(1) - \alpha$ (where α is a constant); and

$LP(n) = LV(n) + \alpha$, and

in accordance with the correction amount, the correcting section changes a signal amplitude of the equalized signal corresponding to the reference level.

13. An information reproducing method according to claim 12, wherein the correction amount is a value determined such that the constant α is the same as a

value LVd represented by each interval between the plurality of reference levels that are used for the maximum-likelihood decoding.

14. An information reproducing method according to claim 11, wherein the correction amount is a value determined such that at least one of corrected values of the plurality of peak levels in the histogram of the equalized signals that correspond to the reference levels matches values of the plurality of reference levels that are used for the maximum-likelihood decoding.

15. An information reproducing method according to claim 11, wherein the correction amount is a value determined such that at least one of corrected values of the plurality of peak levels in the histogram of the equalized signals that correspond to left and right reference levels adjacent to a central reference level matches values of the left and right reference levels adjacent to the central reference level of the plurality of reference levels that are used for the maximum-likelihood decoding.

16. An information reproducing method according to claim 11, wherein, when a histogram of the equalized signals has an asymmetric distribution including a fine portion and a coarse portion with respect to a peak level corresponding to a central reference level the reference levels, the correction amount is a value

determined such that, in left and right reference levels adjacent to the central reference level of the plurality of reference levels that are used for the maximum-likelihood decoding, a value of the reference level on the side where the distribution includes the fine portion matches a corrected value of a peak level corresponding to the value of the reference level.

17. An information reproducing method according to claim 11, wherein the correction amount is a value determined such that reference levels provided at second left and right portions from a central reference level of the plurality of reference levels that are used for the maximum-likelihood decoding matches at least one of corrected values of a plurality of peak levels of the equalized signals corresponding to the reference levels provided at the second left and right portions from the central reference level.

18. An information reproducing method according to claim 11, wherein, when a histogram of the equalized signals has an asymmetric component distribution including a fine portion and a coarse portion with respect to a peak level corresponding to a central reference level the reference levels, the correction amount is a value determined such that, in reference levels provided in second left and right portions of the plurality of reference levels that are used for the maximum-likelihood decoding, a value of the reference

level on the side where the distribution includes the fine portion matches a corrected value of a peak level corresponding to the value of the reference level.

19. An information reproducing method according to claim 11, wherein, when the plurality of reference levels that are used for the maximum-likelihood decoding are represented by LV(1), LV(2), …, LV(n-1), and LV(n) in sequence from the lower level and when a plurality of peak levels in a histogram of equalized signals that correspond to the reference levels and that are output from the equalizing section are represented by LP(1), LP(2), …, LP(n-1), and LP(n) in sequence from the peak level whose corrected value is smaller, a value LVd represented by each interval between the plurality of reference levels that are used for the maximum-likelihood decoding is used to perform output restriction for the equalized signals to signals in a range between LP(1) - 1/2·LVd and LP(n) + 1/2·LVd.

20. An information reproducing method according to claim 11, wherein the correction of the equalized signals is performed by using a variable gain amplifier whose amplification factor can be changed corresponding to external signals.